5-1 GENERAL.

This chapter describes space organization principles that may be employed in the development and review of designs. A principle is defined here as a rule exemplified in the organization and layout of a building design, after the space requirements have been established as discussed in Chapter 2, paragraph 2-5. Principles are described in this chapter in relation to the following. general design sequence.

a. ESTABLISH AFFECTS OF THE SITE. Principles concerning site topography, climate, size and shape, orientation, etc., will determine the general configuration and location of the building on the site.

b. ESTABLISH BASIC SPATIAL ORGANIZATION. The site constraints together with the overall mission and desired image of the ACES Center will help establish the scheme of spatial organization best suited to an individual project.

c. DEVELOP FUNCTIONAL LAYOUT. Principles concerning functional adjacency, circulation, control, acoustics, etc., will determine the location of spaces within the basic configuration.

d. DEVELOP STRUCTURAL AND ENVIRONMENTAL SUPPORT MODULES. Principles concerning mechanical zoning, ceiling height, structural loading, modularity, and maintenance will determine adjustments to the building layout needed to make the facility habitable and constructible.

e. DEVELOP CONCEPT FLOOR PLAN.

5-2 PRINCIPLES RELATED TO SITE CONSTRAINTS AND OPPORTUNITIES

a. ORGANIZE SPACES IN RELATION TO THE SIZE, SHAPE AND ORIENTATION OF THE SITE. Based on the maximum coverage of the site desired, the building may be single-story or multi-story. Space organization must also consider the orientation of the site which will tend to determine the locations that will provide views and natural lighting or that will require protection against sun and glare.

b. ORGANIZE SPACES TO FIT INTO THE NATURAL TOPOGRAPHY. Existing ground forms, trees and other site features should be preserved insofar as is reasonably possible. At the same time the space organization must function efficiently both indoor and outdoor. For example, a sloping site may suggest a split-level facility to preserve natural features, while access for the physically handicapped from parking areas into the building may require grading to reduce slopes in certain areas. Spaces should be organized to take advantage of existing views.

c. ORGANIZE SPACES SO THAT THEY MAY BENEFIT FROM NATURAL WARMING AND COOLING EFFECTS. Where possible, building forms, courtyards, earth mounds, vegetation and trees should be provided to capture or direct air movement as well as to control the effects of the sun.

5-2 PRINCIPLES RELATED TO SITE CONSTRAINTS AND OPPORTUNITIES (cont'd)

d. ORGANIZE SPACES IN RELATION TO VEHICULAR/PEDESTRIAN CIRCULATION. This must be accomplished with respect to access (to both site and building) by students, visitors and staff (including the handicapped), maintenance and service personnel.

(1) The main entrance should be visible from both the parking lot and the street.

(2) Service entrances should not be visible from the parking lot and the street, but should be identified with signs.

e. ORGANIZE SPACES TO ALLOW FUTURE EXPANSION OF FACILITIES. Existing or planned facilites which would limit orderly growth must be taken into consideration. If the building expands, site amenities such as parking will also require expansion.

5-3 PRINCIPLES RELATED TO BASIC SPATIAL ORGANIZATION

a. ORGANIZE SPACES INTO BASIC ORGANIZATIONAL SCHEMES. Spaces should be grouped to afford compatibility of activities, circulation and service requirements. The following three schemes are most applicable to ACES facilities:

(1) Parallel Organization. This scheme is characterized by parallel circulation spines along which groups of spaces with similar functions are arranged. The academic and staff spaces are arranged along one spine, and the vocational-training spaces are grouped separately along another spine, as shown in Figure 5-1. The parallel scheme gives distance between academic and vocational-training activities which facilities noise control, but may inhibit visual control. This type of scheme provides excellent opportunities for expansion, but may be difficult to adapt to unusual site conditions.

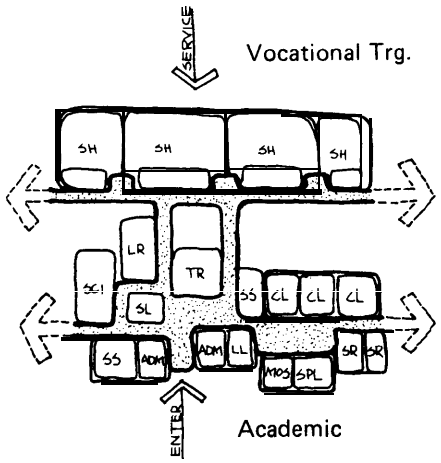

Figure 5-1 Parallel Organization Scheme

5-3 PRINCIPLES RELATED TO BASIC SPATIAL ORGANIZATION (cont'd)

(2) Axial Organization. This scheme is developed by dividing the circulation into two axial paths separating the academic and vocational-training spaces along two different axes as shown in Figure 5-2. Spaces can be arranged along the axis on one or both sides. The axial scheme facilitates both noise and visual control. It also provides excellent opportunity for expansion of facilities and adapts well to varying site conditions.

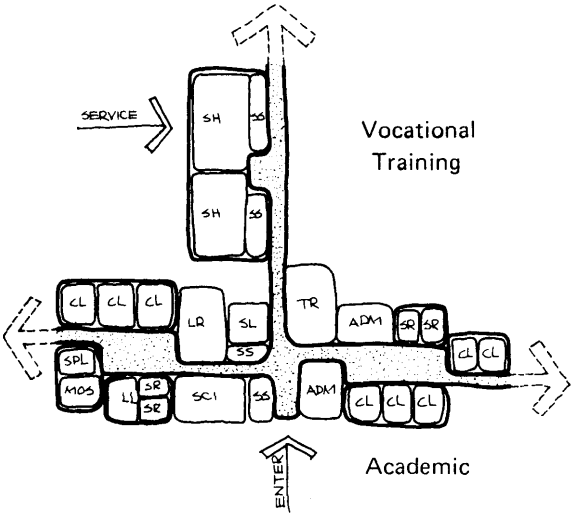

Figure 5-2 Axial Organization Scheme

(3) Dispersed Organization. This scheme is characterized by circulation linkages that both connect and separate activities. Academic and vocational-training spaces are arranged along individual spines, separated by a connector spine along which staff and support spaces are arranged as shown in Figure 5-3. The dispersed scheme also facilitates good noise control but may inhibit visual control. This scheme is more suitable for severe climate conditions but may have limited adaptability to difficult site conditions.

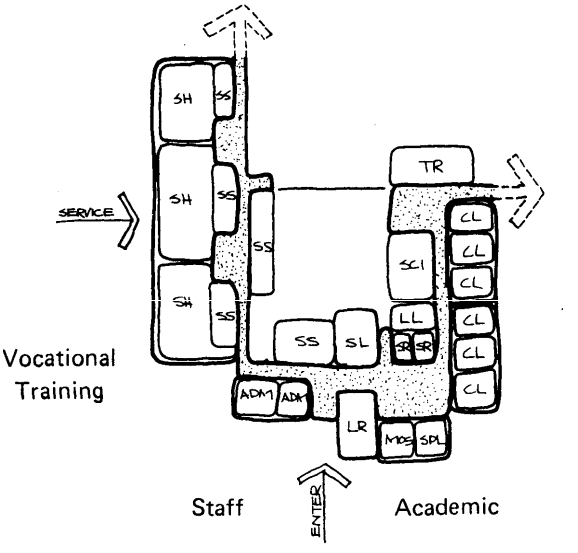

Figure 5-3 Dispersed Organization Scheme

5-3 PRINCIPLES RELATED TO BASIC SPATIAL ORGANIZATION (cont'd)

b. ORGANIZE SPACES IN CONJUNCTION WITH PLANNED SEQUENCES OF VIEWING POSITIONS. Each viewing position should be used to create a perceptual experience for participants as they move through the spatial organization scheme. Such experiences can be created by: arranging spaces to emphasize volumetric differences in heights, widths and lengths; through the use of focal points established by light, form and color (including natural elements inside and out); and through the use of decorative elements (color, texture, light and form) to establish visual rhythm and movement. Sequences of viewing positions should always be coordinated with circulation flows even though they may involve separate paths.

5-4 PRINCIPLES RELATED TO FUNCTIONAL LAYOUT.

a. ORGANIZE SPACES TO ESTABLISH WORKABLE ADJACENCY RELATIONSHIPS. Students, visitors and staff must interact with one another, and some activities must be closely associated. Generally, the greater the interaction of persons and activities, or flow of materials between one space and another, the closer the spaces should be to each other.

b. ORGANIZE SPACES TO ESTABLISH A CONVENIENT CIRCULATION FLOW. Visitors and students must be able to easily enter and exit the building and find the activities and staff provided. Staff must also be able to readily perform the tasks required, moving the material and equipment necessary to conduct instructional and other functions. Usually, spaces which generate heavy traffic should be located near to entrances, and those frequented by persons unfamiliar with the ACES Center should be near the main entrance.

c. ORGANIZE SPACES SO THAT ALL PERSONS CAN BE EFFECTIVELY EVACUATED DURING AN EMERGENCY. Space should be located, with respect to type and load of occupancy, to minimize distance of travel to safe outside exits, o-r to protective construction zones.

d. ORGANIZE SPACES FOR FLEXIBILITY OF SPACE USE. Spaces should be organized so that they may be combined, separated or slightly modified to enhance the versatility of the building and to accommodate possible changes in ACES program functions. Space organization should allow for changes in degree of privacy, from being open for visual control to being closed for privacy.

e. ORGANIZE SPACES TO SIMPLIFY VISUAL CONTROL. Spaces requiring surveillance and control should be organized so that there is capability to supervise from a central viewing position or positions. Capability to supervise entrance and exit traffic, use of toilets and equipment is an example.

f. ORGANIZE SPACES IN RELATION TO SOUND LEVEL COMPATIBILITY. Cluster spaces which produce high noise levels so they can be more economically isolated or located remote from quiet spaces. Separate noisy from quiet spaces with circulation, storage and toilet spaces where possible.

5-5 PRINCIPLES RELATED TO STRUCTURE AND ENVIRONMENTAL SUPPORT.

a. ORGANIZE SPACES TO MAXIMIZE ECONOMY OF STRUCTURE. Establish a standard module (where applicable) which is efficient and economical for both the layout of structure and the layout of ceiling and wall systems, lighting and air handling equipment. The structure must handle critical floor loads and allow for possible multi-use. Overall, the building should be made as compact as possible, to minimize both structure and HVAC support in terms of heat loss and/or gain.

b. ORGANIZE SPACE TO MINIMIZE REQUIREMENTS FOR RESISTIVE CONSTRUCTION AND/OR EXTINGUISHMENT SYSTEMS. Group spaces requiring this type of protection.

c. ORGANIZE SPACES TO PROVIDE PROTECTIVE CONSTRUCTION ZONES. Where fallout or storm protection is required, spaces which employ resistive construction for other purposes (e.g., fire protection) and those that may have built-in characteristics for providing such protections should be organized where possible into dual-use protective zones.

d. ORGANIZE SPACE TO MAXIMIZE ECONOMY OF ENVIRONMENTAL SUPPORT SYSTEMS. Spaces should be organized into comfort zones where different lighting and/or HVAC may be required to support the activity in the space or group of spaces. (See chapter 4, Table 4-1 for a summary of environmental criteria.) Spaces requiring plumbing services should be organized to minimize pipe runs, for both supply and waste. Space for mechanical/electrical equipment requiring the attention of facilities engineer personnel and communications officer such as for operation, maintenance and repair purposes, should be located to provide both efficient service to respective groups of spaces, and access from the outside.